AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims

1.   (Previously Presented) In an Ethernet network, a method of mapping an original Media Access Control (MAC) address to a unique locally administered virtual MAC address, said method comprising the steps of:

utilizing a first portion of the virtual MAC address to define a MAC domain for the address;

utilizing a second portion of the virtual MAC address to indicate that the address is a locally administered address;

utilizing a third portion of the virtual MAC address to indicate a unit-specific use; and

utilizing a fourth portion of the virtual MAC address to indicate an organizationally assigned unit-unique MAC address;

wherein the step of utilizing a first portion of the virtual MAC address to define a MAC domain for the address includes defining different MAC domains for units that have the same unit-unique MAC address, thereby ensuring each unit has a unique locally administered virtual MAC address.

2.   (Previously Presented) In an Ethernet network, a method of mapping an original Media Access Control (MAC) address to a unique locally administered virtual MAC address, said method comprising the steps of:

utilizing a first portion of the virtual MAC address to define a MAC domain for the address;

utilizing a second portion of the virtual MAC address to indicate that the address is a locally administered address;

utilizing a third portion of the virtual MAC address to indicate a unit-specific use; and

utilizing a fourth portion of the virtual MAC address to indicate an organizationally assigned unit-unique MAC address;

wherein the unique locally administered virtual MAC address includes six octets, and wherein:

the step of utilizing a first portion of the virtual MAC address to define a MAC domain for the address utilizes the six most significant bits of the first octet of the virtual MAC address to define the domain; and

the step of utilizing a second portion of the virtual MAC address to indicate that the address is a locally administered address utilizes the second-least significant bit of the first octet of the virtual MAC address to indicate that the address is a locally administered address.

3.   (Original)   The method of claim 2, wherein the step of utilizing a third portion of the virtual MAC address to indicate the unit-specific use includes utilizing the second and third octets of the virtual MAC address to indicate the unit-specific use.

4.   (Original)   The method of claim 3, wherein the step of utilizing the second and third octets of the virtual MAC address to indicate the unit-specific use includes utilizing fields within the second and third octets to indicate a line number for each user, a Permanent Virtual Circuit (PVC) for each user, and an index for each virtual MAC address utilized for each PVC.

5.   (Original)   The method of claim 1, wherein different nodes are assigned different Organizationally Unique Identifiers (OUIs), and the step of utilizing a first portion of the virtual MAC address to define a MAC domain for the address includes defining a different domain for each assigned OUI.

6.   (Previously Presented)   The method of claim 1, wherein the step of utilizing a first portion of the node's locally administered MAC address to define a MAC domain includes the steps of:

comparing the unit-unique MAC address against unit-unique MAC addresses that are already used in other nodes; and

if the unit-unique MAC address has already been used in another node, defining a new MAC domain for the virtual MAC address.

7.   (Original)   The method of claim 6, wherein the step of comparing the unit-unique MAC address against unit-unique MAC addresses that are already used in other nodes includes accessing a MAC address database that stores MAC addresses for all nodes in the network.

8.   (Original)   The method of claim 1, wherein the original MAC address is received by an address mapping function that maps original MAC addresses from Ethernet packets to one of a plurality of assigned locally administered virtual MAC addresses.

9.   (Previously Presented) In an Ethernet network, a system for mapping an original Media Access Control (MAC) address to a unique locally administered virtual MAC address, said system comprising:

at least one address mapping function that maps original MAC addresses to one of a plurality of assigned locally administered virtual MAC addresses;

means within the mapping function for utilizing a first portion of the virtual MAC address to define a MAC domain for the virtual MAC address;

means within the mapping function for utilizing a second portion of the virtual MAC address to indicate that the address is a locally administered address;

means within the mapping function for utilizing a third portion of the virtual MAC address to denote a unit-specific use; and

means within the mapping function for utilizing a fourth portion of the virtual MAC address to denote an organizationally assigned unit-unique MAC address;

wherein the means for utilizing a first portion of the virtual MAC address to define a MAC domain for the address includes means for defining different MAC domains for

units that have the same unit-unique MAC address, thereby ensuring each unit has a unique locally administered virtual MAC address.

10.   (Previously Presented) In an Ethernet network, a system for mapping an original Media Access Control (MAC) address to a unique locally administered virtual MAC address, said system comprising:

at least one address mapping function that maps original MAC addresses to one of a plurality of assigned locally administered virtual MAC addresses;

means within the mapping function for utilizing a first portion of the virtual MAC address to define a MAC domain for the virtual MAC address;

means within the mapping function for utilizing a second portion of the virtual MAC address to indicate that the address is a locally administered address;

means within the mapping function for utilizing a third portion of the virtual MAC address to denote a unit-specific use; and

means within the mapping function for utilizing a fourth portion of the virtual MAC address to denote an organizationally assigned unit-unique MAC address;

wherein the unique locally administered virtual MAC address includes six octets, and wherein the first portion of the virtual MAC address that is utilized to define the MAC domain is the six most significant bits of the first octet of the virtual MAC address.

11.   (Original)   The system of claim 10, wherein the second portion of the virtual MAC address that is utilized to indicate that the address is a locally administered MAC address is the second-least significant bit of the first octet of the virtual MAC address.

12.   (Original)   The system of claim 11, wherein the third portion of the virtual MAC address that is utilized to denote a unit specific use includes a second and third octet of the virtual MAC address.

13. (Previously Presented) The system of claim 9, further comprising:

a MAC address database that stores unit-unique MAC addresses for all nodes in the network;

means for accessing the MAC address database and for comparing the unit-unique MAC address against unit-unique MAC addresses that are already used in other nodes; and

means within the address mapping function for defining a new MAC domain for the original MAC address if the unit-unique MAC address has already been used in another node.

14. (Previously Presented) A method of preventing subscriber spoofing in an Ethernet network comprising the steps of:

mapping an original Media Access Control (MAC) address to a locally administered virtual MAC address; and

ensuring the locally administered virtual MAC address is unique by:

utilizing a first portion of the virtual MAC address to define a MAC domain for the address;

utilizing a second portion of the virtual MAC address to indicate that the address is a locally administered address;

utilizing a third portion of the virtual MAC address to indicate a unit-specific use; and

utilizing a fourth portion of the virtual MAC address to indicate an organizationally assigned unit-unique MAC address;

wherein the step of utilizing a first portion of the virtual MAC address to define a MAC domain for the address includes defining different MAC domains for units that have the same unit-unique MAC address, thereby ensuring each unit has a unique locally administered virtual MAC address.

15. (Previously Presented) An address mapping function adapted to operate in an access node in an Ethernet network, said address mapping function comprising:

logic adapted to map each original Media Access Control (MAC) address to one of a plurality of assigned locally administered virtual MAC address; and

logic adapted to ensure that each assigned locally administered virtual MAC address is unique, said uniqueness ensuring logic including:

logic adapted to utilize a first portion of the virtual MAC address to define a MAC domain for the virtual MAC address;

logic adapted to utilize a second portion of the virtual MAC address to indicate that the address is a locally administered address;

logic adapted to utilize a third portion of the virtual MAC address to denote a unit-specific use; and

logic adapted to utilize a fourth portion of the virtual MAC address to denote an organizationally assigned unit-unique MAC address;

wherein the logic adapted to utilize the first portion of the virtual MAC address to define a MAC domain for the address includes logic adapted to define different MAC domains for units that have the same unit-unique MAC address, thereby ensuring each unit has a unique locally administered virtual MAC address.

16. (Original) The address mapping function of claim 15, further comprising a database function adapted to store all assigned locally administered virtual MAC addresses.

17. (Original) The address mapping function of claim 15, further comprising a communication function adapted to communicate with an external database that stores all assigned locally administered virtual MAC addresses.

18. (Canceled)